GEODAKOV, Aleksandr Ivanovich; BORISHCHEVA, M.M., red.; KUZ'MINA, E.B., red.; MALEK, Z.N., tekhn. red.

[Zincography]TSinkografiia. Moskva, Izd-vo "Iskusstvo," 1962. 309 p. (MIRA 15:12)
(Zincography) (Photography)

KUZ'MINA, E.B., red.; GORINA, V.A., tekhn. red.

[Technological instructions for photoengraving processes] Tekhnologicheskie instruktsii po fototsinkografskim protsessam. Moskva, Izd-vo "Iskusstvo," 1963. 223 p.
(MIRA 16:11)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut poligraficheskoy promyshlennosti.
(Photoengraving)

FEDOROV, P.I.; DUDAREVA, A.G.; KUZ'MINA, E.M.

Physicochemical study of the systems indium (III) iodide - tin (II) iodide, indium (III) iodide - lead (II) iodide. Zhur.neorg.khim. 6 no.6:1378-1380 Je '61. (MIRA 14:11)
(Systems (Chemistry)) (Iodides)

KUZ'MINA, E.N.

Some results of the study of the connection caused by the polarization of specimens of carbonate rocks with their densities and water-reservoir properties. Vest.Mosk.un.Ser.4: Geol. 19 no.5:89-93 S-O '64.
(MIRA 17:12)

1. Kafedra geofiziki Moskovskogo universiteta.

KUZ'MINA, G.; ZAYTSEVA, Yo., starshiy nauchnyy sotrudnik; POLYAKOV, P., kand. sel'skokhoz. nauk

Trace elements in the control of diseases. Zashch. rast. ot vred. i bol. 10 no.6:17-18 '65. (MIRA 18:7)

1. Zaveduyushchiy otdelom zashchity rasteniy Ust'Kamenogorskoy sel'skokhozyaystvennoy opytnoy stantsii (for Kuz'mina).

AUTHORS: Kanavets, V. I., Kuz'mina, G. A. and Lopukhin, V. M.

TITLE: Noise in a 2-Ray Tube Produced by Shot Fluctuations in the Beams (Shumy dvuluchevoy lampy, vyzvannyye drobovymi fluktuatsiyami v potokakh)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 6, pp 800-805 (USSR)

ABSTRACT: The work aims at determining the dependence of the noise figure of a 2-ray tube on a number of its parameters. It is assumed that the tube gives a comparatively high amplification and that the noise figure can be expressed by (see Ref.1):

$$F = \frac{\overline{E_{1s}^2} + \overline{E_{1t}^2}}{\overline{E_{1t}^2}} \qquad (1)$$

where $\overline{E_{1s}}$ is the amplitude of the amplified wave at the beginning of the interaction space, which is produced by the

Noise in a 2-Ray Tube Produced by Shot Fluctuations in the Beams

fluctuations of the current and velocity in the beam; $\overline{E_{1t}}$ is the amplitude of the amplified wave which is produced by the thermal fluctuations at the signal source (related to the origin of the interaction space). The tube is illustrated diagrammatically in Fig.1; it consists of: 1) a 2-beam electron gun, 2) an input resonator, 3) an output resonator, 4) a collector, and 5) the interaction space. Evaluation of E_{1s} and E_{1t} is carried out under the assumption that the charge density in both the beams is identical and that the amplification takes place past the modulating grids. It is further assumed (Ref.2) that the alternating components of the velocity and the current density in the beams can be written in the forms of Eqs.(2), where k is the beam wave number, n is the number of the beam ($n = 1$ or 2), e/m is the ratio of the charge of an electron to its mass, ρ_o is the average beam charge density, E_k is the initial amplitude of the k^{th} wave, ω is the angular frequency, β is the propagation constant and v_{on} is the mean velocity of the n^{th} beam. By solving the dispersion equation of the system (Ref.2), it is shown that the alternating

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velocity and density components of the beams can also be written as Eqs.(5). On the basis of the above equations the square of the amplitude of the increasing (amplified) wave can be written in the form of the last equation on p 802. Symbols μ, ξ, and δ are defined on p 801; symbols $q(o)$ and $v(o)$ refer to the initial values of the alternating components of the current density and the velocity, respectively. The above results are used to derive expressions for E_{1s} and E_{1t}. The mean square values of these quantities are given by expressions (16) and (20) respectively, where I_{o1} and I_{o2} are the electron currents in the first and the second beams respectively, S_o is the cross-section of a beam, Δf is the equivalent noise bandwidth of the system, γ is defined by Eq.(11), T_c is the temperature of the cathode, V_{on} is the electron

Noise in a 2-Ray Tube Produced by Shot Fluctuations in the Beams

accelerating potential and $\alpha = v_{o2}/v_{o1}$ (the velocity ratio). On the basis of Eqs.(16) and (20) the noise figure of the system can be written in the form of Eqs.(21). A graph of the noise figure as a function of α is given in Fig.2; this was calculated for a tube operating at $I_{o1} = 20$ mA, $V_{o1} = 350$ V, $\omega/\omega_o = 10$ and $Z = 100\,\Omega$ (Z is the internal resistance of the thermal noise signal). L. Z. Aitova helped the authors in the calculations. The paper contains 2 figures and 6 references, 4 of which are English and 2 Soviet.

SUBMITTED: October 9, 1956

1. Electron tubes - Analysis 2. Noise - Applications
3. Mathematics - Applications

L 33602-66 EWT(m)/EWP(t)/ETI IJP(c) JD/RDW

ACC NR: AR6016232 SOURCE CODE: UR/0058/65/000/011/E065/E066

AUTHOR: Khabarova, V. A.; Sharavskiy, P. V.; Kuz'mina, G. A.

TITLE: Some electric properties of n-type mercury telluride

SOURCE: Ref. zh. Fizika, Abs. 11E516

REF SOURCE: Sb. Fizika, Dokl. k XXIII Nauchn. konferentsii Leningr. inzh.-stroit. in-ta. L., 1965, 9-18

TOPIC TAGS: mercury compound, telluride, stoichiometric mixture, annealing, temperature dependence, Nernst effect, Ettingshausen effect, Hall constant, electric property

ABSTRACT: To obtain n-HgTe, a direct synthesis procedure was used in conjunction with vibration, wherein the HgTe was annealed in the presence of Hg vapor. The HgTe single cyrstals were prepared by the Bridgman method. The initial substances were taken as follows: 1) in amounts corresponding to the stoichiometric formula HgTe; these samples remained of the p-type during the course of annealing; 2) with excess Hg; these samples became n-type during the annealing. The annealing was carried out in a stream of nitrogen vapor at different temperatures. After every 2 - 4 hours of annealing, the temperature dependence of the electric conductivity, Hall coefficient, thermal electric power, and longitudinal and transverse Nernst-Ettingshausen effect were measured. It was observed that annealing of samples at a temperature below 200C changes their electric properties, which are recovered in time. Annealing at temperatures above 200C causes irreversible changes of all the electric parameters. These changes remain for many months. V. Kharitonov. [Translation of abstract]

SUB CODE: 20

Card 1/1

L 09225-67 EWT(l)/EWP(m)/EWP(w)/EWP(t)/ETI IJP(c) AT/JD/JG

ACC NR: AR6019911 SOURCE CODE: UR/0275/66/000/002/B008/B009

54
53

AUTHOR: Khabarova, V. A.; Sharavskiy, P. V.; Kuz'mina, G. A

TITLE: Certain electrical properties of telluride of mercury for electron conductivity

SOURCE: Ref zh. Elektronika i yeye primeneniye, Abs. 2B65

REF SOURCE: Sb. Fizika. Dokl. k XXIII Nauchn. konferentsii Leningr. inzh.-stroit. in-ta, L., 1965, 9-18

TOPIC TAGS: inorganic anion, electric conductivity, vapor plating, telluride, annealing, Ettinghausen effect, Nernst effect, Hall coefficient, thermal electromotive force

ABSTRACT: A conventional method, whereby HgTe is annealed with no mercury vapors present, was used to obtain HgTe with electron conductivity. The Bridgeman method was used to prepare the HgTe crystals. The original substances were taken: (1) in amounts corresponding to the stoichiometric formula for HgTe, samples of which retained p-type conductivity during the annealing process; (2) with an excess of mercury. These samples acquired n-type conductivity during the annealing process. The annealing was done in a stream of nitrogen vapor at various temperatures. The temperature dependence of the conductivity, the Hall coefficient, the thermal

Card 1/2 UDC: 539.293:621.315.592:546.24'49

L 09225-67

ACC NR: AR6019911

electromotive force, and the longitudinal and transverse Nernst-Ettinghausen effect, were measured every 2 to 4 hours of annealing. It was found that annealing the samples at temperatures below 200°C changed their electrical properties, which were restored with the passage of time. Annealing at temperatures above 200°C resulted in irreversible changes in all electrical parameters, which held for many months. The samples obtained by the method described are no different in their physical properties than are samples obtained by the Rodo method an annealing in mercury vapor. 8 illustrations, 1 table. Bibliography of 12 titles. V. Kh. [Translation of abstract]

SUB CODE: 20, 07

88161

9,4230 (also 1052, 1071)

S/109/60/005/011/010/014
E074/E485

AUTHORS: Lopukhin, V.M., Roshal', A.S. and Kuz'mina, G.A.

TITLE: The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifiers

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.11, pp.1837-1847

TEXT: A theoretical investigation of the double-beam travelling-wave tube and backward-wave tube is given. In these tubes the interaction of the beams on each other is superimposed on their interaction with the delay line. The tubes thus represent a combination of an electron-wave tube and a travelling-wave tube and an electron-wave tube and a backward-wave tube respectively. Since the bunching mechanism in the t.w.t. and electron-wave tube is similar, when the average velocities of the beams are sufficiently close the second beam would be expected to introduce travelling-wave interaction. In the limiting case of equal beam velocities, a t.w.t results. With increase in the difference in the beam velocities the bunching mechanism begins to differ from that in the backward-wave tube and the amplification decreases. In the double beam backward-wave tube the situation is more complex

S/109/60/005/011/010/014
E074/E485

The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifiers

since the beams and energy travel in opposite directions and the bunching mechanism in the backward-wave and electron-wave tube are different. For small electron densities, the electron wave interaction might possibly be small and the process may simply be a superposition of backward wave interactions. In deriving the dispersion equations the notation in Pierce's book is adhered to. Assuming the conditions of small signal theory and using the result of Johnson's paper (Ref.4) for a double-beam backward wave tube the propagation constant Γ will satisfy the dispersion equation

Eq. (4)

$$\frac{jI_{01}\beta_{e1}\Gamma}{2U_{01}(j\beta_{e1}-\Gamma)^2}+\frac{jI_{02}\beta_{e2}\Gamma}{2U_{02}(j\beta_{e2}-\Gamma)^2}=\frac{1}{\frac{-\mu\Gamma\Gamma_1K}{\Gamma_1^2-\Gamma^2}+2QK}. \qquad (4)$$

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S/109/60/005/011/010/014
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The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifiers

where I_{om} and U_{om} are the constant components of the current and potential in the beam of number m, $\beta_{em} = \omega/u_{om}$ where u_{om} is the average velocity of a beam of number m and the factor $\mu = 1$ when a delay line is present and zero when it is absent. In the presence of a delay line the parameter C_1 is given by the dispersion equation

Eq. (8)
$$\frac{C_1}{\delta^2} + \frac{C_2^3}{-\frac{1}{a}(1-a)^2 + 2j(1-a)C_1\delta + aC_1^2\delta^2} = \frac{C_1(b + jd - j\delta)}{1 - 4QC_1(b + jd - j\delta)}, \qquad (8)$$

где
where
$$a = \frac{\beta_{e1}}{\beta_{e2}} = \frac{u_{02}}{u_{01}}; \qquad (9)$$

Eq. (9)
$$C_m^3 = \frac{I_{0m}K}{4U_{0m}} \qquad (m = 1, 2); \qquad (10)$$

(10)

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The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

Eq.(8) determines the propagation constants of five forward waves

$$\Gamma_k = j\beta_{el} - \beta_{el} C_1 \delta_k \qquad (k = 1,2,3,4,5) \qquad (11)$$

For the two beam travelling-wave tube, similarly we have, using Pierce's result

Eq. 12.

$$\frac{E}{\Gamma} = \left[\frac{\Gamma\Gamma_1 K}{\Gamma_1^2 - \Gamma^2} + 2QK\right] i. \qquad (12)$$

which gives the dispersion equation

$$\frac{C_1}{\delta^2} + \frac{C_2^2}{-\frac{1}{a}(1-a)^2 + 2j(1-a)C_1\delta + aC_1^2\delta^2} = \frac{C_1(b+jd-j\delta)}{-\mu - 4QC_1(b+jd-j\delta)}, \qquad (13)$$

Eq. 13

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The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

where the symbols have their usual meaning. The roots of the two dispersion equations were calculated on a computer considering amplification conditions only and not oscillation. Investigation of the roots of Eq.(8) and (13) enables the following conclusions to be drawn. In both tubes there are five waves, one having constant amplitude. The others may have constant amplitude or may be amplified or attenuated within certain limits depending on the parameters. The phase velocities of two of these waves are close to the average velocity of one beam and the phase velocities of the other two are close to that of the second beam. In the degenerate case ($a = 1$ or $C_2 = 0$) there are three waves, one of constant amplitude and two increasing or attenuated waves with velocities close to that of the first beam. The roots δ_k in this case agree with those obtained for the ordinary backward wave tube. The increase or decrease of the waves is determined by the corresponding root $Re\delta_k$ since the amplification factor is proportional to $C_1 N Re\delta_k$. The beams also affect each other very

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strongly when their average velocities differ slightly, but in this case an ordinary t.w.t. or b.w.t. is obtained. The relation of the roots to the different tube parameters is shown in Fig.2 for the b.w.t. and in Fig.3 and 4 for the t.w.t. Expressions for the field and current can be found from the solutions of the dispersion equation and the boundary conditions. For the b.w.t. these are given by

Eq. (26)

$$E(z) = \sum_{k=1}^{6} E_k e^{-\Gamma_k z}, \qquad (26)$$

The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

$$i(z) = i_1(z) + i_2(z) = Bj \exp\left(-2\pi N j \frac{z}{l}\right) \times$$

$$\times \sum_{k=1}^{5} \left[\frac{1}{\delta_k^2} + \frac{C_2^3}{C_1} \frac{1}{-\frac{1}{a}(1-a)^2 + 2j(1-a)C_1\delta_k + aC_1^2\delta_k^2}\right] E_k e^{2\pi C_1 N \delta_k \frac{z}{l}}, \quad (27)$$

Eq. 27.

28. $$B = \frac{I_{01}}{2U_{01}\beta_{e1}C_1^2} = \frac{2C_1}{K\beta_{e1}}. \quad (28)$$

The field at the output may be larger than at the input depending on the parameter C_1, C_2, a and QC_1. For certain values 25 dB amplification is possible. The variation of field with coordinate z is shown in Fig.6. The fluctuations are due to beating of the natural waves of the system. The field and current for a t.w.t. may be calculated in a similar manner and give results of an analogous nature. The amplification depends on the parameter.

$$\varkappa = \frac{\omega}{\omega_p}\frac{a-1}{a+1} = (2C_1\sqrt{QC_1})^{-1}\frac{a-1}{a+1} > \sqrt{2}. \quad (29)$$

Eq. 29

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E074/E485

The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

and may be as high as 80 dB at the optimum value. Acknowledgments are expressed to the post-graduate students U.Ven-ta and R.T.Denchevyy for their assistance. There are 8 figures and 5 non-Soviet references.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova Kafedra radiotekhniki Physics Division, Moscow State University imeni M.V.Lomonosov, Department of Radioengineering)

SUBMITTED: January 21, 1960

Card 8/11

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E074/E485

The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

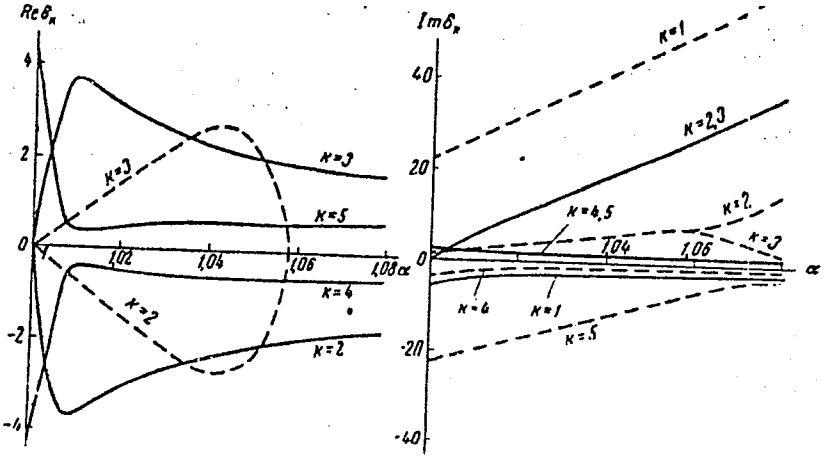

Рис. 2. Действительные и мнимые части корней дисперсионного уравнения ЭВЛОВ. $C_1 = 0{,}002$, $C_2 = 0{,}010$, $b = 2{,}072$:

Fig.2.

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S/109/60/005/011/010/014
E074/E485

The Linear Theory of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

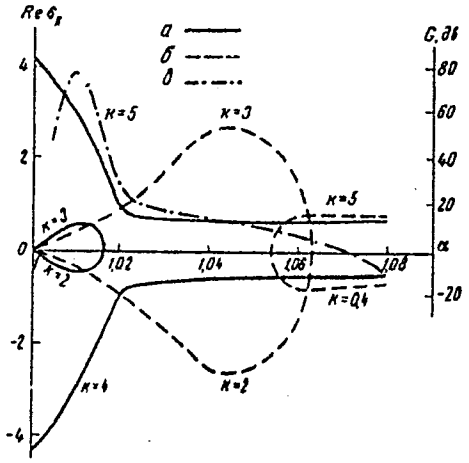

Рис. 3

Fig.3.

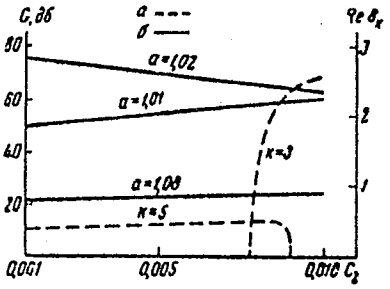

Рис. 4

Fig.4.

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The Linear Thecry of Double-Beam Backward-Wave Tube and Travelling-Wave Tube Amplifier

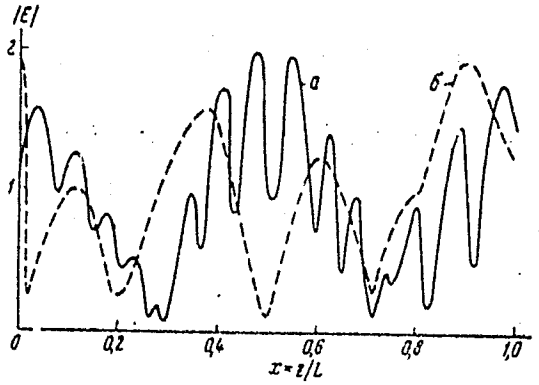


Рис. 6. Распределение поля в ЭВЛОВ при наличии пространственного заряда. $QC_1 = 1$, $C_1N = 0{,}4914$, $b = 2{,}072$;

а — $C_1 = C_2 = 0{,}002$, $a = 1{,}06$; б — $C_1 = C_2 = 0{,}010$, $a = 1{,}08$

Card 11/11

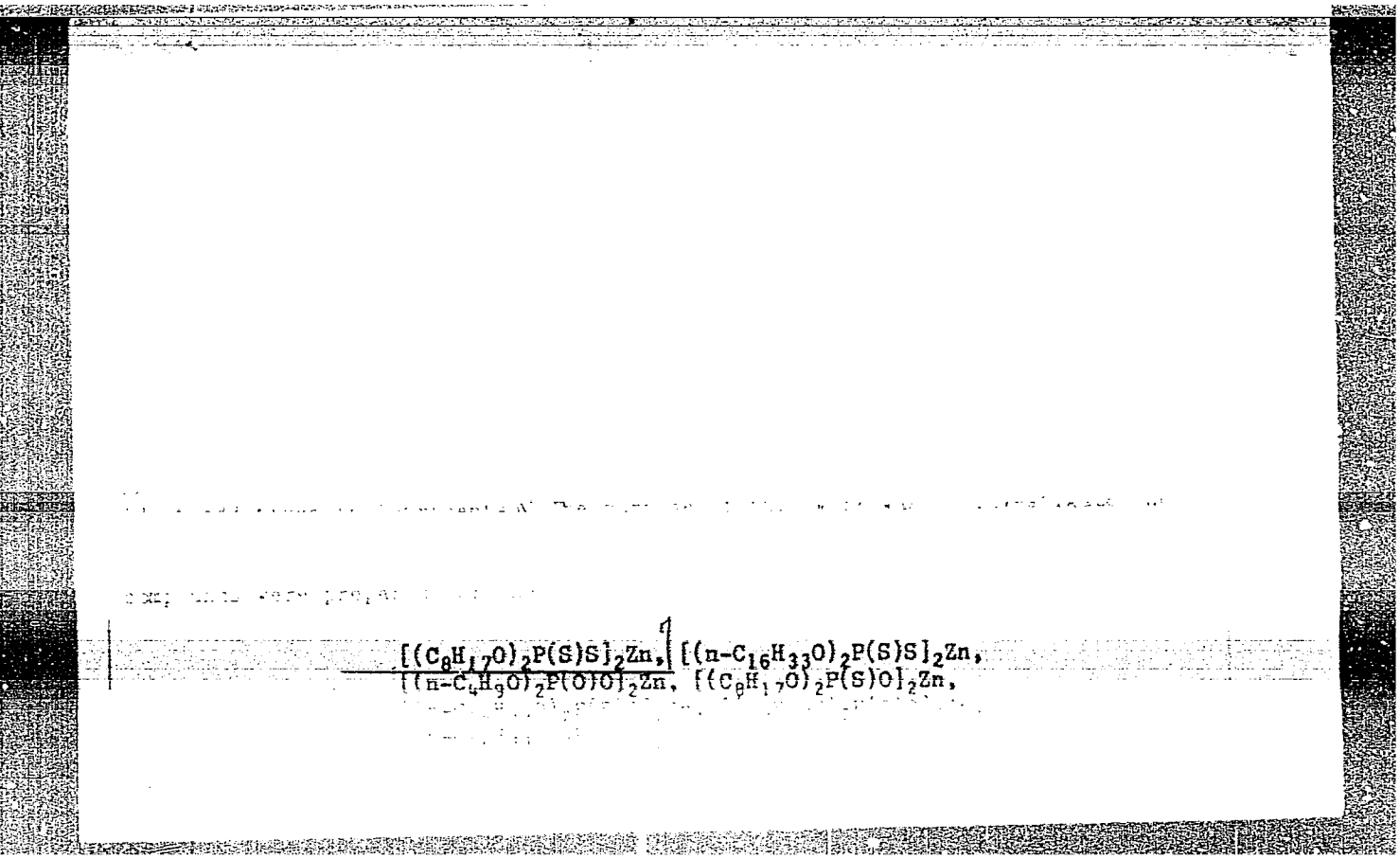
MARTYNOV, V.P.; KUZ'MINA, G.A.; CHARKIN, B.D.; MAMEDLI, R.M.

Backward-wave electron-beam amplifier with additional modulation of the beam at double signal frequency. Radiotekh. i elektron. 8 no.3:524-527 Mr '63. (MIRA 16:3)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. Lomonosova.
(Microwave tubes) (Electron beams)

KUZ'MINA, G.M.

Geometry of a system of two partial differential equations.
Uch. zap. MGPI no. 243:99-108 '65 (MIRA 19:1)



$[(C_8H_{17}O)_2P(S)S]_2Zn$,	$[(n\text{-}C_{16}H_{33}O)_2P(S)S]_2Zn$,
$[(n\text{-}C_4H_9O)_2P(O)O]_2Zn$,	$[(C_8H_{17}O)_2P(S)O]_2Zn$,

All the compounds were tested for their antioxidant effectiveness toward an alkane-cyclane mixture. It was found that the nature of the alkyl group has no appreciable effect on the antioxidant activity of the ester. The activity is primarily a function of the sulfur content and its position. Since mono- and dithiophosphates have very similar activity, it was concluded that the determining [illegible] [illegible] the most active antioxidant was the basic zinc di-n-butyl dithiophosphate. Orig. art. has: 1 figure and 1 table.

[VS]

L 29560-66 EWP(j)/EWI(m)/T (A) RM/DJ
ACC NR: AP6003435 SOURCE CODE: UR/0065/66/000/001/0054/0057

AUTHOR: Zimina, K. I.; Kotova, G. G.; Sher, V. V.; Kuz'mina, G. N.; Sanin, P. I.

ORG: VNII NP

52
B

TITLE: Determination and characteristics of zinc dialkyldithiophosphate-type additives based on infrared absorption spectra

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 1, 1966, 54-57

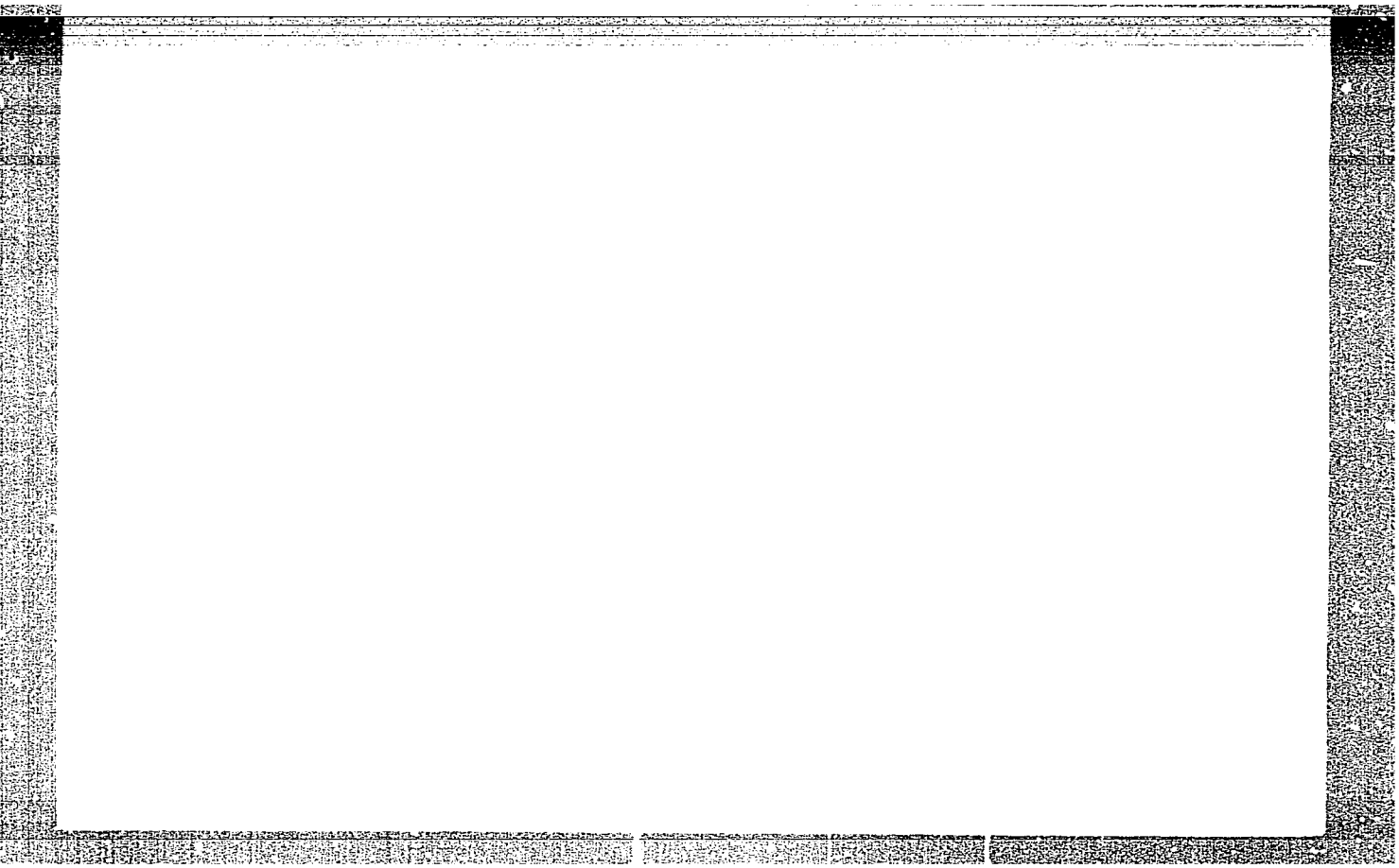
TOPIC TAGS: lubricant additive, zinc compound, phosphorus compound, sulfur compound, IR spectrum

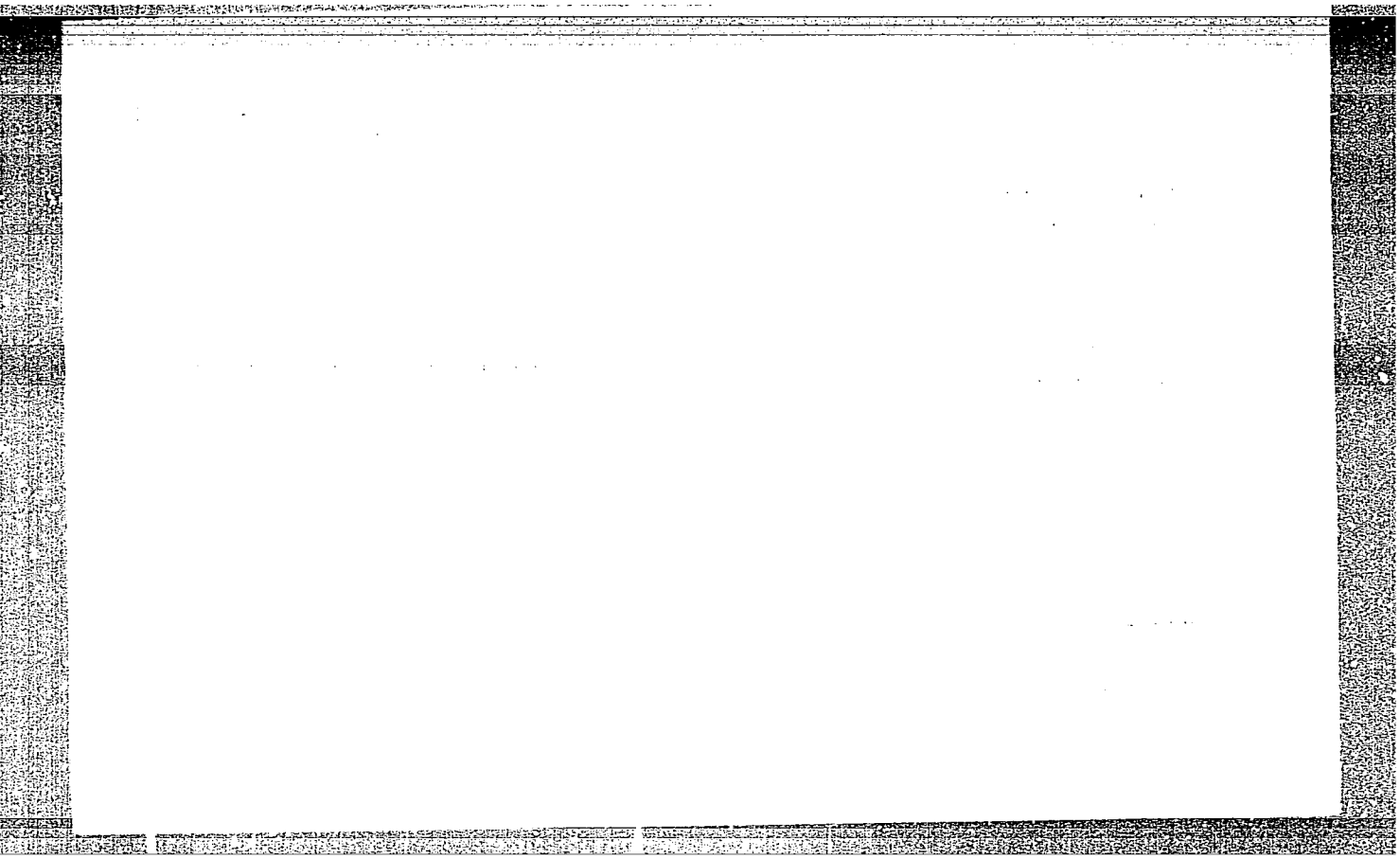
ABSTRACT: Infrared absorption spectra of motor oil additives based on zinc dialkyldithiophosphates were studied in the 400-700 cm^{-1} range. The alkyl radicals of zinc dialkyldithiophosphates (general formula $(RO)_2P(S)SZnS(S)P(OR')_2$) contained isopropyl, isobutyl, n-butyl, isoamyl, 2-ethylhexyl, sec-heptyl, and higher radicals. It was found that the additives contain basic salts in addition to neutral zinc salts of dialkyldithiophosphates, and that the absorption band with a maximum at 480 cm^{-1} is due to stretching vibrations of the Zn-O bond in such basic salts. The

Card 1/2 UDC: 543.544 : 546.47

presence of the latter has no adverse effect on the quality of the additives. A study of the P-S band of zinc dialkyldithiophosphates showed that if the extinction coefficients of two dialkyldithiophosphates and the molecular mass of one of them are known, the molecular mass and hence the average number of carbon atoms present in the alkyl groups of the second dialkyldithiophosphate can be determined. Orig. art. has: 5 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 00/ ORIG REF: 002/ OTH REF: 000





MOGILEVSKIY, Ye.M.; KHOR'KOVA, O.G.; FINGER, G.G.; PREDVODITELEVA, A.D.; KUZ'MINA, G.P.; MIKHAYLENKO, P.P.; TUMAYAN, S.A.

Continuous process for producing viscose rayon and for its finishing. Khim. volok. no. 6:25-27 '60. (MIRA 13:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Mogilevskiy, Khor'kova, Finger). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut trikotazhnoy promyshlennosti (for Predvoditeleva, Kuz'mina). 3. TSentral'nyy nauchno-issledovatel'skiy institut shelka (for Mikhaylenko, Tumayan).
(Rayon)

DEMINA, A.N.; KUZ'MINA, G.P.; ROMANOVA, L.S.

Determination of the unevenness of silk dyeability.
Standartizatsiia 27 no.10:41-45 O '63. (MIRA 16:11)

USHAKOVA, K.N., starshiy nauchnyy sotrudnik; POPOVA, A.V., mladshiy nauchnyy sotrudnik; KUZ'MINA, G.P.; NIKOLAYEVA, Z.V., maldshiy nauchnyy sotrudnik; KATSENELENBOGEN, A.M.; RYZHOVA, V.N., inzh.

Industrial processing of 90 Tm acetate silk in the knit goods industry. Tekst. prom. 24 no.9:35-38 S '64.

(MIRA 17:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Ushakova, Popova). 2. Rukovoditel' syr'yevoy gruppy Vsesoyuznogo nauchno-issledovatel'skogo instituta trikotazhnoy promyshlennosti (for Kuz'mina). 3. Vsesoyuznyy nauchno-issledovatel'skiy institut trikotazhnoy promyshlennosti (for Nikolayeva). 4. Rukovoditel' syr'yevov gruppy Nauchno-issledovatel'skoy laboratorii trikotazhnoy fabriki im. Dzerzhinskogo (for Katsenelenbogen). 5. Nauchno-issledovatel'skaya laboratoriya trikotazhnoy fabriki im. Dzerzhinskogo (for Ryzhova).

L 05/08-07 [illegible]

ACC NR: AP6029621 (N) SOURCE CODE: UR/0114/66/000/008/0026/0029

IJP(c) EM/WW/WE/JD/WB

AUTHOR: Filatova, M. A. (Engineer); Kuz'mina, G. T. (Engineer)

ORG: none

TITLE: Changes in the structure and properties of EI765, EI893 and EI827 alloy blades operating in an experimental gas turbine

SOURCE: Energomashinostroyeniye, no. 8, 1966, 26-29

TOPIC TAGS: alloy, oxidation resistance, heat resistant alloy, nickel chromium alloy, aluminum containing alloy, titanium containing alloy/EI765 nickel-chromium alloy, EI893 nickel-chromium alloy, EI827 nickel-chromium alloy

ABSTRACT: The performance of EI765, EI893 and EI827 alloy blades has been tested for up to 3000 hr at 750—800C in an experimental gas turbine using diesel fuel containing 0.3—0.6% sulfur. It was found that during the test, an oxide film up to 1 mm thick and consisting of $NiO \cdot Cr_2O_3$ spinel and chromium oxide formed on the surface of the blades. The oxide layer tightly adhered to the metal in all the blades tested, without peeling or cracking, except for one EI827 alloy blade in which a crack in the oxide layer was observed after 1220-hr run at 750C. Due to the outward diffusion of alloying elements from the metal, the content of chromium, aluminum and titanium in the metal surface dropped sharply, in some cases more than 50%, bringing about a softening of the surface layer, with a microhardness drop from the initial

Card 1/2 UDC: 62-226.2.621.438.001.42

L 05709-67

ACC NR: AP6029621

425—500 kg/mm^2 to 300—350 kg/mm^2 after 700—1000 hr of operation at 800C. The diffusion took place mainly at the beginning of the test, and the duration of exposure at 750—800C had little or no effect on the chemical composition of the metal surface layer. After 2000-hr operation at 750C, the strength of EI765 and EI827 alloys decreased insignificantly, but the elongation dropped by about 30%. After 1500 hr operation at 800C, the mechanical properties of the alloys decreased by about 60%. The most heat-resistant EI827 alloy was found to be less oxidation-resistant than EI893 and EI765 alloys and the oxide film of the former alloy was 4—5 times thicker than that of the latter alloys. Such deep penetration of the oxide layer into the body of the blade may result in a premature failure, particularly in turbines which have to stop frequently, such as transport and peak gas turbines. In order to improve the service life of gas-turbine blades, the problem of their oxidation-resistance should be studied further. Orig. art. has: 5 figures and 3 tables. [TD]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5069

Card 2/2

L 01045-66 EWT(m)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c)
MJW/JD/HW/EM/MJW(CL)
ACCESSION NR: AP5018873 UR/0096/65/000/008/0050/0052
546.3-19:621.438.004.12

AUTHOR: Filatova, M. A. (Engineer); Kuz'mina, G. T. (Engineer)

TITLE: EI765L cast heat-resistant alloy

SOURCE: Teploenergetika, no. 8, 1965, 50-52

TOPIC TAGS: nickel base alloy, cast alloy, heat resistant alloy, alloy heat resistance, alloy property/EI765L alloy

ABSTRACT: EI765L alloy, a cast modification of EI765 heat-resistant nickel-base alloy, has been developed. Annealed at 1150C for 3 hr, oil quenched, aged at 800C for 20 hr and air cooled, the alloy has a tensile strength of 72.5—76.1 kg/mm^2 and an elongation of 8—12.7% at 20C, and 64.6—66.6 kg/mm^2 and 10.1—19.2%, respectively, at 750C. The 10,000 hr rupture strength at 750C is 20 kg/mm^2, which exceeds considerably that of cast austenitic steels E787L and TsZh11R and that of nickel alloys TsZh6, TsZh16 and EI607 AL. No signs of embrittlement were observed after 6500 hr at 750C under a stress of 22 kg/mm^2. The alloy fatigue strength at 750C is 28 kg/mm^2 (N = 10^8 cycles), which is roughly the same as that of the wrought materials used for gas-turbine blades. Prolonged holding at high temperature increases the

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ACCESSION NR: AP5018873

content of the strengthening γ-phase. After aging at 800C for 5000 hr, hardness and notch toughness remained at the original level: 270 kg/mm^2 and 1.5 kgm/cm^2, respectively. The fluidity of the alloy is close to that of 30L steel, and the resistance to hot cracking is higher. Thus, EI765 cast alloy can be used for parts operating for a long time at temperatures up to 750C. Orig. art. has: 2 figures and 2 tables.

[ND]

ASSOCIATION: TsNIITMASh

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 000 ATD PRESS: 4068

Card 2/2

KUZ'MINA, G.V.

Numerical determination of univalence radii for analytic functions.
Trudy mat. inst. 53:192-235 '59. (MIRA 12:9)
(Functions, Analytic)

AUTHOR: KUZ'MINA, G.V. (Leningrad) 20-5-6/54

TITLE: Determination of the Smallest Radius of the Schlicht Function for a Class of Analytic Functions (Opredeleniye naimen'shego radiusa odnolistnosti dlya odnogo klassa analiticheskikh funktsiy)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol.117, Nr 5, pp.751-754 (USSR)

ABSTRACT: Let $H_1^*(a)$ denote the class of the functions

$$f(z) = \sum_{k=0}^{\infty} c_k z^k = \left(\sum_{k=0}^{\infty} d_k z^k \right)^2 ,$$

where the functions $F(z) = \sum_{k=0}^{\infty} d_k z^k$ are regular in $|z| < 1$,

$\sum_{k=0}^{\infty} |d_k|^2 = 1$, $|c_1| = 2|d_0||d_1| = a$ $(0 < a \leq 1)$.

The minimum radius of schlichtness R for the functions of the class $H_1^*(a)$ is given by the equation

$$R = \min \left\{ r^*, r^{**} \right\} ,$$

where r^* and r^{**} are the smallest positive roots of the

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Determination of the Smallest Radius of the Schlicht Function for a Class of Analytic Functions 20-5-6/54

equations

$$\varphi^{*}(r) = a^2 - 2a\,r + 2a\,r^3 - r^4 = 0$$

$$\varphi^{**}(r) = a^2 - (4-a^2)r^2 + 3r^4 - r^6 = 0$$

1 Soviet reference is quoted.

ASSOCIATION: Leningrad Branch of the Mathematical Institute imeni V.A. Steklov, Academy of Sciences USSR (Leningradskoye otdeleniye Matematicheskogo instituta imeni V.A.Steklova Akademii nauk SSSR)

PRESENTED: By V.I. Smirnov, Academician, 21 June 1957

SUBMITTED: 20 June 1957

AVAILABLE: Library of Congress

Card 2/2

Kuz'mina, O.V.

16(1) PHASE I BOOK EXPLOITATION SOV/2217

Akademiya nauk SSSR. Matematicheskiy institut imeni V. A. Steklova

Raboty po priblizhennomu analizu (Works on Approximate Analysis) Moscow, AN SSSR, 1959. 391 p. (Its: Trudy, tom. 53) Errata slip inserted. 2,200 copies printed.

Ed.: L. V. Kantorovich, Corresponding Member, USSR Academy of Sciences, Professor; Resp. Ed.: I. G. Petrovskiy, Academician; Deputy Resp. Ed.: S. M. Nikol'skiy, Professor; Ed of Publishing House: N. K. Zaychik; Tech. Ed.: R. A. Arons.

PURPOSE: This book is intended for professional mathematicians interested in approximation methods.

COVERAGE: The book contains a collection of works in the field of approximate computations completed at the Leningrad Branch of the Mathematics Institute imeni V. A. Steklov of the Academy of Sciences, USSR, from 1953 to 1958. All the works contained in this book are published in full for the first time. The theoretical study of approximation methods conceptually related to the application of methods of functional analysis has a significant place in the book. In addition, the book contains groups of works on the following subjects: 1) approximate methods of solving the boundary value problems of mathematical physics, 2) numerical methods in the theory of functions, 3) numerical methods of linear algebra, and 4) numerical computation of an indefinite integral. The editor thanks the following people: V. I. Krylov, V. N. Faddeyeva, and V. P. Il'in, scientific workers at the Institute, for editing the articles; Ye. A. Meynik, T. P. Akimova, K. Ya. Alfer'yeva and G. A. Gaber, workers at the Institute's laboratory, for computing the tables; Professor S. M. Lozinskiy for his critical review of many of the works; A. A. Borodnitsinyy and his colleagues for reviewing the works published; Professors D. K. Faddeyev and Yu. Ye. Alenitsyn for final review of the book.

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AVAILABLE: Library of Congress

(11)

KHAZANOV, Ye.I.; KUZ'MINA, G.V.

Changes in the phase composition of the nepheline-soda limestone charge during sintering in the presence of a reducing agent. Izv. Sib. otd. AN SSSR no.9:68-75 '59 (MIRA 13:3)

1. Vostochno-Sibirskiy filial Sibirskogo otdeleniya AN SSSR.
(Systems (Chemistry)) (Alumina)

KHAZANOV, Ye.I.; SHUSHLYANNIKOVA, E.M.; KHLYUPINA, A.F.; KUZ'MINA, G.V.

Industrial assaying of feldspar rocks as a raw material for the production of alumina. Trudy Vost.-Sib. fil. AN SSSR no.43:36-39 '62. (MIRA 16:3)

(Feldspar—Testing) (Aluminum oxide)

KUZ'MINA, G.V.; KHLYUPINA, A.F.; KHAZANOV, Ye.I.; SHISHLYANNIKOVA, E.M.; Prinimal uchastiye GALKOV, A.S.

Nepheline rocks of the Buryat A.S.S.R. are a possible raw material for the production of alumina. Trudy Vost.-Sib. fil. AN SSSR no.43:63-68 '62. (MIRA 16:3)

(Buryat-Mongolia--Nephelite) (Aluminum oxide)

KHAZANOV, Ye.I.; KUZ'MINA, G.V.; STAKHEYEVA, S.A.; SHUL'TS, B.V.

Changes in the phase composition of clays during heating in a neutral atmosphere in the presence of a solid reducing agent. Trudy Vost.-Sib. fil. AN SSSR no.43:69-76 '62. (MIRA 16:3)
(Aluminum oxide) (Clay) (Phase rule and equilibrium)

KHAZANOV, Ye.I.; KUZ'MINA, G.V.; DOMTSOVA, S.G.

Changes in the phase composition of an alumina-kaolin charge mixture in the process of charge-resistance melting of fused silicon and aluminum. Trudy Vost.-Sib. fil. AN SSSR no.43:77-81. '62. (MIRA 16:3)
(Aluminum—Electrometallurgy) (Slag) (Phase rule and equilibrium)

S/897/62/000/043/001/001
B117/B186

AUTHORS: Khazanov, Ye. I., Safonova, Ye. G., Stakheyeva, S. A., Kuz'mina, G. V.

TITLE: Reaction of aluminum carbide with magnesium oxide

SOURCE: Akademiya nauk SSSR. Vostochno-Sibirskiy filial. Trudy. no.43. 1962. Syr'yevyye resursy legkikh metalliv Vostochnoy Sibiri. v. 4, 112-128

TEXT: The reduction of magnesium oxide with aluminum carbide was studied both in theory and practice. The carbide was produced by heating metallic aluminum and electrode graphite, parts by weight ratio 2 : 1, for 3 hrs in the presence of 5% [illegible] at 1350 - 1400°C in a hydrogen stream (5 l/hr). After treatment of the reaction products with 0.5 N HCl solution in the cold and increasing the hydrogen stream to 10 l/hr, the Al_4C_3 content rose from 50% to 73 - 90%. Magnesium oxide reacted rapidly with Al_4C_3 on heating in vacuo in a special apparatus at a temperature as low as 900°C, forming metallic magnesium, carbon black, and spinel:

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Reaction of aluminum carbide with ... S/897/62/000/043/001/001
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$$8MgO + Al_4C_3 = 6\,Mg + 2(MgO \cdot Al_2O_3) + 3C$$

The magnesium yield, being ~7 - 10% increased with elevated temperatures, reaching 81-86% at 1200-1300°C. In the presence of calcium oxide MgO + Al_4C_3 yielded pentacalcium trialuminate:

$$9MgO + 1.5\,Al_4C_3 + 5CaO = 9\,Mg + 5CaO \cdot 3Al_2O_3 + 4.5C.$$

The magnesium yield was shown to increase by an excess of reducing agent, MgO, or CaO. An addition of calcium fluoride accelerated the reaction between MgO and Al_4C_3. There are 8 figures and 6 tables.

Card 2/2

32808
S/020/62/142/001/004/021
C111/C444

16.3000

AUTHOR: Kuz'mina, G. V.

TITLE: Some covering theorems for single-valued functions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 1, 1962, 29-31

TEXT: Let $S(a_1, a_2)$ be the class of functions $w = f(z)$, $f(0) = 0$, which are regular and schlicht in $|z| < 1$ and which map the unit circle on domains which do not contain the points a_1, a_2; let $f(z; a_1, a_2)$ be that single valued function of this class for which $|f'(0)| \leq f'(0; a_1, a_2)$, $f(z) \in S(a_1, a_2)$. Let S be the class of functions $w = f(z) = z + c_2 z^2 + \ldots$, being regular and schlicht in $|z| < 1$. S_R be a subclass of S with real coefficients; K be a complete elliptic integral of first kind with the modulus k; sn(z), $\theta(z)$ be Jacobi functions with the same modulus k.

Theorem 1: If $f(z) = cz + \ldots \in S(a_1, a_2)$, $|a_1| = |a_2| = a$, $|\arg a_1 - \arg a_2| = 2\alpha$ $(0 \leq \alpha \leq \frac{\pi}{2})$, then strictly holds:

Card 1/5

Some covering theorems for . . .

$$\frac{a}{|c|} \geqslant h(\alpha) = \begin{cases} \frac{1}{4}, & \alpha = 0, \\ \sqrt{\frac{4pm+(m^2-p^2)^2}{16m^2}\frac{\theta(0)}{\theta(2u)}}, & 0 < \alpha < \frac{\pi}{2}, \\ \frac{1}{2}, & \alpha = \frac{\pi}{2}, \end{cases} \qquad (1)$$

where $u = u(\alpha)$, $m = m(\alpha)$, $p = p(\alpha)$ and $k = k(\alpha)$ for $0 < \alpha < \frac{\pi}{2}$ are uniquely defined by

$$\text{sn } u = m - p \quad (0 < u < K), \quad \frac{m \cos\alpha - 1}{\sqrt{pm}} = \frac{\theta'(u)}{\theta(u)}$$

$$p = \sqrt{m^2 - 2m\cos\alpha + 1}, \quad k^2 = \frac{p+m-\cos\alpha}{2p}.$$

The equality sign in (1) holds in $0 \leq \alpha \leq \frac{\pi}{2}$ only for the functions

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Some covering theorems for . . . S/020/62/142/001/004/021
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$f(z) = f(\varepsilon z; a_1, a_2)$, $|\varepsilon| = 1$. For $0 < \alpha < \pi/2$ each of these extremal functions maps the circle $|z| < 1$ on the whole plane which is cut along the radius $\arg w = \arg \sqrt{a_1, a_2}$, $|w| \geq ma$ $(1 < m < \infty)$ and along two analytic curves being symmetric to this radius and having the endpoints a_1, $m\sqrt{a_1 a_1}$ and a_2, $m\sqrt{a_1 a_2}$. For $\alpha = 0$ and $\alpha = \frac{\pi}{2}$ the extremal functions $f(\varepsilon z; a_1, a_2) = \frac{4a_1 \varepsilon z}{(1+\varepsilon z)^2}$ and $f(\varepsilon z; a_1, -a_1) = \frac{2a_1 \varepsilon z}{1+\varepsilon^2 z^2}$, $|\varepsilon| = 1$ map the circle $|z| < 1$ on the whole w-plane which only is cut along the radius $\arg w = \arg a_1$, $|w| \geq a$ in the first case, and along the radius $\arg w = \arg a_1$, $|w| \geq a$ and $\arg w = \arg a_2$, $|w| \geq a$ in the second case.

Theorem 2 and 3 are consequences of theorem 1 and contain statements on the point sets $\bigcap_{f \in s} [f(|z| < 1) \cup \overline{f(|z| < 1)}_\beta]$ respectively $\bigcap_{f \in s_R} f(|z| < 1)$

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C111/C444

Some covering theorems for . . .

and its boundaries, where $f(|z|<1)$ indicates the image of $|z|<1$ under the mapping $w = f(z)$, and $\overline{f(|z|<1)}\beta$ being the symetric domain of $f(|z|<1)$ with respect to the radius $\arg w = \beta$.

If $S^*(a_1, a_2)$ indicates the set of those functions of the class $S(a_1, a_2)$ which map $|z|<1$ on domains which are star-shaped with respect to the origin, then it follows from the Lindelöf principle:

Theorem 4: If $f(z) = cz + \ldots \in S^*(a_1, a_2)$, $|a_1| = |a_2| = a$, $|\arg a_1 - \arg a_2| = 2\pi\lambda$ $(0 \leq \lambda \leq \frac{1}{2}$ then it holds the strict inequality

$$\frac{a}{|c|} \geq 1/4\, \lambda^{-\lambda} (1-\lambda)^{-(1-\lambda)} \quad (0 \leq \lambda \leq 1/2)$$

and the equality sign is only realised by

$$f(z) = \frac{4\lambda^{\lambda}(1-\lambda)^{1-\lambda} \cdot \sqrt{a_1 a_2}\,\varepsilon z}{(1-\varepsilon z)^{2\lambda}(1+\varepsilon z)^{2(1-\lambda)}}, \quad |\varepsilon| = 1.$$

Card 4/5

32808

Some covering theorems for . . . S/020/62/142/001/004/021
C111/C444

For $0 < \lambda \leq 1/2$ the extremal functions map the circle $|z| < 1$ on the whole plane w with the radial cuts $\arg w = \arg a_1$, $|w| \geq a$ and $\arg w = \arg a_2$, $|w| \geq a$. For $\lambda = 0$ the extremal functions map $|z| < 1$ on the whole plane with the only cut $\arg w = \arg a_1$, $|w| \geq a$.

The author mentions: M. A. Lavrent'yev.

There is one Soviet-bloc and one non-Soviet-bloc reference. The reference to English language publication reads as follows: J. A. Jenkins, Ann. Math. 71, no. 1 (1960).

ASSOCIATION: Leningradskoye otdeleniye matematicheskogo instituta im. V. A. Steklova Akademii nauk SSSR (Leningrad Branch of the Institute of Mathematics im. V. A. Steklov of the Academiy of Sciences USSR)

PRESENTED: August 3, 1961, by V. J. Smirnov, Academician

SUBMITTED: August 2, 1961

Card 5/5

KUZ'MINA, G.V.; MERKULOVA, A.I.; KUTYANIN, G.I., red.

[Artificial fur; a textbook] Iskusstvennye mekha; uchebnoe posobie. Moskva, Zaochnyi in-t sovetskoi torgovli, 1963. 35 p. (MIRA 18:3)

1. Zaveduyushchiy kafedroy tovarovedeniya promyshlennykh tovarov Zaochnogo instituta sovetskoy torgovli (for Kutyanin).

S/080/63/036/002/002/019
D403/D307

AUTHORS: Khazanov, Ye. I., Safonova, Ye. G., Stakheyeva, S. A. and Kuzmina, G. V.

TITLE: The interaction of aluminum carbide with magnesium oxide

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 2, 1963, 251-263

TEXT: A brief review is first given of the physical and chemical properties of Al_4C_3. In the present work the authors prepared this compound by a number of methods, the best being the interaction of Al with electrode graphite, in the presence of cryolite, at 1350 - 1400°C, over 3 hours, under H_2. The mixture was then treated with HCl. The product was reacted with pure MgO, under vacuum, at 800 - 1300°C. The reaction

$$9MgO + Al_4C_3 = 6Mg + 2(MgO \cdot Al_2O_3) + 3C$$

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The interaction of ...

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proceeded appreciably at 800°C, fairly rapidly at 900°C (yield of Mg ~7 - 10%), and rapidly at 1200 - 1300°C (81 - 86% Mg). Small additions of CaF_2 accelerated the reaction. The products were confirmed by petrographic, chemical and x ray analyses. In the presence of lime, the reaction was found to be

$$9MgO + 1.5Al_4C_3 + 5CaO = 9Mg + 5CaO.3Al_2O_3 + 4.5O.$$

There are 6 figures and 8 tables.

SUBMITTED: July 22, 1961

Card 2/2

KHAZANOV, Ye.I.; STAKHEYEVA, S.A.; KOZ'MINA, G.V.

Interaction between sodium aluminate and dicalcium silicate.
Zhur.prikl.khim. 38 no.6:1381-1383 Je '65.
(MIRA 18:10)

KUZ'MINA, G.V.

Covering theorems for functions regular and univalent in a circle. Dokl. AN SSSR 160 no.1:25-28 Ja '65.

(MIRA 18:2)

1. Leningradskoye otdeleniye Matematicheskogo instituta im. V.A. Steklova AN SSSR. Submitted June 22, 1964.

Kuz'mina, G. Ye

USSR/ Biology - Embryology

Card 1/1 Pub. 22 - 59/60

Authors : Kuz'mina, G. Ye

Title : Inflammation of the adult segments in the zone of growth and regeneration of Nereis pelagica

Periodical : Dok. AN SSSR 100/4, 833-835, Feb 1, 1955

Abstract : An investigation was conducted to determine the inflammatory processes and phagocytosis in mature segments in the zone of growth of the Nereis pelagica worm and also during the regeneration processes. The results obtained are described in detail. Five USSR references (1892-1954). Illustrations.

Institution : The A. A. Zhdanov State University, Leningrad

Presented by : Academician K. M. Bykov, November 14, 1954

KUZ'MINA, G.Ye.

Effect of gamma irradiation on the development of motor activity in the embryogenesis of chiks. Mat. po evol. fiziol. 4:274-281 '60. (MIRA 13:10)
(GAMMA RAYS--PHYSIOLOGICAL EFFECT) (EMBRYOLOGY--BIRDS)
(MOVEMENT (PHYSIOLOGY))

IVANOVA, Z.G.; DAVYDOV, A.B.; Prinimali uchastiye: KISELEVA, M.Ye.; KUZ'MINA, I.I.; KHAZANSKAYA, R.G.; SMELLI, T.B.

Thermostable organosilicon adhesives VK-2 and VK-6. Plast.massy no.4: 37-39 '63. (MIRA 16:4)
(Adhesives—Thermal properties) (Silicon organic compounds)

KUZ'MINA, I.M.; KUZ'MIN, K.P.

Thrombosis of aneurysmal dilation of the orifice of the vena saphena magna simulating strangulated femoral hernia. Vest.khir. no.5:136-137 '61. (MIRA 15:1)

1. Iz khirurgicheskogo otdeleniya (zav. - I.M. Kuz'mina) Ostrovskoy mezhrayonnoy bol'nitsy Pskovskoy oblasti. Adres avtorov: Pskovskaya oblast', gor. Ostrov, mezhrayonnaya bol'nitsa.
(FEMUR—HERNIA) (SAPHENOUS VEINS—DISEASES) (THROMBOSIS)

KUZ'MINA, I.N.

Efficiency experts of the glass industry. Leg.prom. 14 no.9:47-51 S '54. (MLRA 7:9)
(Glass manufacture)

KUZ'MINA, I.P.

Experimental study of the formation of PbS and ZnS in aqueous solutions of chlorides. Geol. rud. mestorozh. no.1:60-68 Ja-F '61. (MIRA 14:4)

1. Akademiya nauk SSSR, Institut kristallografii, Moskva.
(Chlorides) (Sulfides)

S/564/61/003/000/019/029
D228/D304

AUTHORS: Bryatov, L. V. (Deceased), and Kuz'mina, I. P.

TITLE: Crystallization of the sulfides of lead and zinc from aqueous solutions of chloride salts

SOURCE: Akademiya nauk SSSR. Institut kristallografii. Rost kristallov, v. 3, 1961, 416-420

TEXT: The aim of the authors was to study the growth conditions of galenite and sphalerite crystals--occurring in hydrothermal ore-deposits and widely used in industry--in a hydrothermal environment. One series of experiments was performed over a period of 6 - 20 days in stainless steel autoclaves with non-corrosive Ti-insets containing PbS, ZnS and a $Na_2S_x - Na_2S_2O_3$ solvent at a pressure of 500 - 1000 atm. A finely-crystalline aggregate with dimensions of up to 0.3 mm for individual crystals was obtained by recrystallizing PbS and ZnS at 350 - 450°, although not all of the ZnS was recrystallized; the solubility of the sulfides under these conditions appears to be very low. Better results

Card 1/2

Crystallization of the...

were obtained, however, in other, generally similar tests with aqueous solutions of NaCl and LiCl--which have been found by N. Yu. Ikornikova et al (Ref. 9: Dokl. AN SSSR, 111, 105, 1956) to dissolve many sparingly-soluble minerals--as solvents of the PbS and ZnS: lustrous galenite crystals grew to a size of up to 1 mm, and the yellowish sphalerite had dimensions of up to 0.5 mm. During the joint crystallization of PbS and ZnS, even larger crystals with dimensions of up to 2 and 4 mm respectively were formed, but the reason for this phenomenon is not clear. The authors note the relationship between the crystal size and temperature of crystallization; at 450° the dimensions of a crystal are 2 - 3 times greater than at 350°. There are 4 figures and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: E. T. Allen et al, Amer. J. Sci.4,34, 341 (1912); F. G. Smith, Econ. Geol. 35, 646 (1940); J. J. Hemley, Ibid.48, 113-138 (1953).

Card 2/2

18 9500 (1043, 1143)
94.7500 (1160, 1144, 1482)

25894
S/070/61/006/004/006/007
E073/E335

AUTHORS: Belyayev, L.M., Shakhovskoy, G.P., Smirnov, S.P. and Kuz'mina, I.P.

TITLE: Growing of Cadmium Sulphide Crystals at Elevated Pressures

PERIODICAL: Kristallografiya, 1961, Vol. 6, No. 4, pp. 641 - 643

TEXT: Mentioning work of other authors, it is stated that interesting results were achieved by Medcalf and Fahring (Ref. 5 - J. Electrochem. Soc., 105, 719-724, 1958). The authors of this paper developed more simple apparatus for growing cadmium-sulphide crystals (Fig.1). It consists of a thick-walled cylinder 4 with a cover 2, which is fastened by eight bolts 3. The tightening of the cover is accomplished with pressure ring 9 and two gaskets 8. The cylinder carries four electric input leads 10, two of which connect the thermocouple 5 and the other two connect the heating element 7. The cover has a T-shaped pipe 1 which carries a manometer and a valve for filling the cylinder with an

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inert gas. Inlet 6 is used for purging the cylinder before an experiment. For thermal insulation, the entire internal volume between the walls of the vessels and the reflecting screens is filled with magnesium oxide or aluminium oxide. To improve the cooling of the cylinder walls the entire cylinder is placed into a container with running water. The heating element is a spiral of molybdenum wire which surrounds the crucible containing pressed CdS powder. The crucible is made of pure graphite. Tests were conducted in which the temperature was gradually raised to 20-30 °C above the melting point of CdS, maintained for 1.5 hours and then lowered at a rate of 30 °C/hour. It was found that the optimum growth of crystals is achieved at 150-180 atm. pressure of the inert gas, which corresponds to an initial pressure of 80-100 atm. In the tests, columnar CdS single crystals were obtained, which grew together, parallel to each other. The single crystals could be easily separated from each other by fracturing. In most cases the c axis coincided with the vertical axis of the ingot. The growth of these crystals was initiated from large CdS crystallisation centres which

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S/070/61/006/004/006/007
Growing of Cadmium Sulphide Crystals E073/E335

formed at the bottom of the crucible due to the fact that the heat was removed primarily through the bottom. The produced single CdS crystals are of an orange colour, they are transparent and in thin layers; the intensity of the coloration along the height of the ingot differs somewhat; brighter sections form at the beginning of the growth of the crystal and darker sections form at the end. In experiments carried out at temperatures considerably above the CdS fusion temperature, the centre part of the ingot contained a large quantity of fine cavities and bubbles, which is obviously associated with partial dissociation of the CdS. The weight losses during crystallisation did not exceed 10%.
There are 3 figures and 6 references: 1 Soviet and 5 non-Soviet. The three English-language references quoted are: Ref. 1 - R. Frerichs - Phys. Rev., 72, 7, 594-601, 1947; Ref. 3 - A. Addamiano - J. Phys. Colloid. Chem., 61, 9, 1253-1254, 1957; Ref. 5 (quoted in text).

Card 3/4

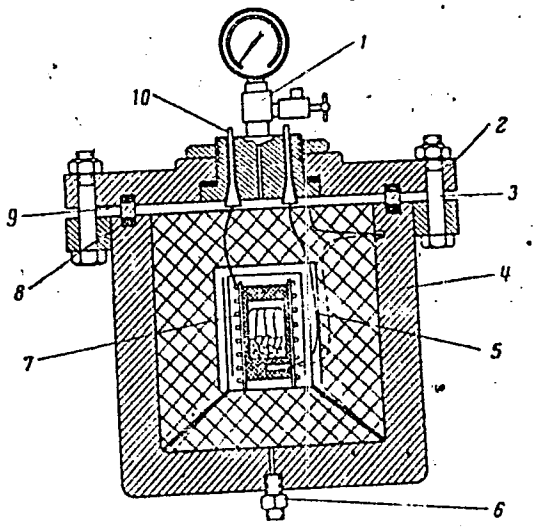
25894
S/070/61/006/004/006/007
E073/E335

Growing of Cadmium Sulphide Crystals ..

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography of the AS USSR)

SUBMITTED: October 25, 1960

Fig. 1:



Card 4/4

S/070/62/007/002/022/022
E132/E160

24,7100

AUTHORS: Shternberg, A.A., Kuz'mina, I.P., and Kuznetsov, V.A.

TITLE: Apparatus for growing single crystals from the melt under pressure

PERIODICAL: Kristallografiya, v.7, no.2, 1962, 334-336

TEXT: It is difficult to grow crystals of ZnS from the melt because of the high vapour-pressure of the components. A closed furnace, with Mo wire heaters, ZrO_2 and sand insulation, capable of working at above 1800° under a pressure of 200 atm N_2, is described. Crystals of ZnS up to 3 cm long were grown.
There are 3 figures.

ASSOCIATION: Institut kristallografii AN SSSR
(Institute of Crystallography, AS USSR)

SUBMITTED: June 26, 1961

Card 1/1

KUZ'MINA, I.P.; LITVIN, B.N.

Crystallization of cassiterite (SnO_2) under hydrothermal conditions. Kristallografiia 8 no.3:478-480 My-Je '63. (MIRA 16:11)

1. Institut kristallografii AN SSSR.

ACCESSION NR: AT4040562 S/2564/64/004/000/0151/0156

AUTHOR: Kuz'mina, I. P.; Antonova, V. F. (deceased)

TITLE: Crystallization of zincite under hydrothermal conditions

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v. 4, 1964, 151-156

TOPIC TAGS: zincite, zinc oxide, zincoxide crystallization, high temperature crystallization, high pressure crystallization, crystallization additive, oxidizing agent, zincite electrical resistance

ABSTRACT: The process of dissolution and crystallization of zincite (ZnO) under high temperature and pressure was studied in alkaline (5-20% NaOH, KOH and LiOH) and acid (4-10% NH_4Cl with additions of HCl) solutions at 200-500C, using Cu- or Ti-lined, 200 cm^3, stainless steel autoclaves. Crystallization was carried out by the well-known method of temperature gradients and the temperature was measured by a chromel-alumel thermocouple on the outer autoclave wall. A graph of the amount of ZnO formed versus alkali concentration at different temperatures shows that the crystallization rate increases with alkali concentration and the magnitude of the temperature gradient despite the amphoteric nature of ZnO. The presence of Na_2CO_3, NaF, NaCl, NaBr and NaI additions was also found to have a significant

Card 1/2

ACCESSION NR: AT4040562

effect on the crystal forms obtained. A solvent containing 15% NaOH, 5% Na_2CO_3 and 5% NaCl was found to be most suitable. Further addition of an oxidizing agent such as H_2O_2, $KClO_3$ or $KMnO_4$ to alkaline solutions resulted in ZnO monocrystals with an electrical resistance which was 2-3 orders of magnitude greater than that of ZnO prepared without the addition of an oxidizing agent. The morphology and goniometric characteristics of the crystals obtained are given in detail. "The morphology and goniometric characteristics of the crystals obtained are given in detail. "The authors thank L. M. Belyayev for suggesting the theme and assistance in the work, and N. Yu. Ikornikova for discussion of the results."
Orig. art. has: 7 figures.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 00 DATE ACQ: 02Jul64 ENCL: 00

SUB CODE: SS NO REF SOV: 002 OTHER: 004

Card 1/2

ACCESSION NR: AT4040564 S/2564/64/004/000/0160/0161

AUTHOR: Kuz'mina, I. P.; Litvin, B.N.

TITLE: The feasibility of preparing montroidite (HgO) crystals under hydrothermal conditions

SOURCE: AN SSSR. Institut kristallografii. Rostkristallov, v. 4, 1964, 160-161

TOPIC TAGS: montroidite, mercuric oxide, mercuric oxide crystallization, high pressure crystallization, high temperature crystallization, montroidite monocrystal

ABSTRACT: Finely powdered mercuric oxide, dissolved in 5% aqueous NaOH, was used as the starting material in a series of crystallization tests to investigate the possibility of obtaining monocrystals of this compound. The material, in ordinary 170-cm^3 steel autoclaves, was placed into an oven with two heating zones. The range of crystallization temperature was 200-300C, the pressure was 50-200 atm., and the duration of the process was 4-5 days. Under these conditions, the mercuric oxide crystallized in the upper portion of the autoclave in the form of well-faced, transparent, lustrous, optically positive crystals.

Card 1/2

ACCESSION NR: AT4040564

Two types of crystals were generally observed: 10 mm · 1-2 mm · 0.2-0.3 mm needles, of high quality, and 1-3 mm isometric crystals with well pronounced faces and admixtures of metallic mercury.

ASSOCIATION: Institut kristallografii AN SSSR (Institute of Crystallography, AN SSSR)

SUBMITTED: 00 DATE ACQ: 02Jul64 ENCL: 00

SUB CODE: NO REF SOV: 000 OTHER: 007

Card 2/2

KUZ'MINA, I.P.; ANTONOVA, V.F. [deceased]

Zincite crystallization under hydrothermal conditions. Rost irist. 4:151-156 '64. (MIRA 17:8)

KUZ'MINA, I.P.; LITVIN, B.N.

Possibility of preparing montroydite (HgO) crystals under hydrothermal conditions. Rost krist. 4:160-161 '64.
(MIRA 17:8)

SOV/137-58-10-20934

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 80 (USSR)

AUTHOR: Kuz'mina, I.S.

TITLE: Experience in the Production of Tubes of a Copper-nickel Alloy with Iron and Manganese (MN5 Alloy) [Opyt proizvodstva trub iz medno-nikelevogo splava s zhelezom i margantsem (splav MN5)]

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Tsvetn. metallurgiya, 1958, Nr 1, pp 153-163

ABSTRACT: MN5 alloy (5-6.5% Ni, 1-1.4% Fe, 0.3-0.8% Mn, and the rest Cu), which has high resistance to corrosion, is used for lines carrying sea water, the tubes being manufactured therefrom being 100-400 mm in diameter and having relatively thin walls (2.5-4 mm). Data are adduced for determination of the coefficient of friction in drawing and for stresses on the boundary between the elastic and plastic zones of the locus of active deformation, and these make it possible to compile a rating sheet for MN5 utilization. Schedules for the extrusion and drawing of five tube sizes of <100-mm diameter are developed and verified under actual shop conditions. B.L.

Card 1/1 1. Pipes--Materials 2. Pipes--Production 3. Copper-nickel alloys--Properties

KUZ'MINA, I.Ye.

Recent data on the ecology of the subterranean vole Microtus (Pitymys) subterraneous Sel.-Long. Biul. MOIP. Otd. biol. 66 no.6:33-42 N-D '61. (MIRA 14:12)
(BORISOVKA DISTRICT--FIELD MICE)

VERESHCHAGIN, N.K.; KUZ'MINA, I.Ye.

Excavations in the caves of Northern Ural. Priroda 51 no.3: 76-78 Mr '62. (MIRA 15:3)

1. Zoologicheskiy institut AN SSSR, Leningrad.
(Ural Mountain region--Excavations (Archaeology))

KUZ'MINA, I.Ye.

Saiga and steppe pika in the upper Pechora Valley. Zool. zhur. 44 no.2:307-311 '65. (MIRA 18:5)

1. Zoologicheskiy institut AN SSSR, Leningrad.

KUZ'MINA, Klavdiya Alekseyevna

Of the Influence of Changes of Acidity-Alkaline Balance of Organisms and Some Soporific in Toxic Combinations of Arsenic

Dissertation for Candidate of a Medical Science degree. Chair of Pharmacology (head, Prof. K.A. Shmelev) Saratov Medical Institute, 1952

KUZ'MINA, K.A.; SHMELEV, K.A., professor, zaveduyushchiy.

Effect of pharmacological sleep on the toxicity of novarsenol. Farm. i toks. 16 no.1:26-28 Mr-Ap '53. (MLRA 6:6)

1. Kafedra farmakologii Saratovskogo meditsinskogo instituta.
(Sleep) (Neoarsphenamine)

Barbamyl (sodium amytal) administered in a dose sufficient to produce sleep exerts a protective action in acute znd subacute novarsenol poisoning of mice. The number of animals that die is reduced, the degree of fat infiltration of internal organs is decreased, and tissue acidosis alleviated.

KUZ'MINA, K.A.

Data on experimental therapy of arsenic poisoning. Farm.i toks. 17 no.1:33-36 Ja-F '54. (MLRA 7:5)

1. Kafedra farmakologii (zaveduyushchiy - professor K.A.Shmelev) Saratovskogo meditsinskogo instituta.
(Arsenic--Toxicology)

KUZ'MINA, K. A.

"Effect of Sodium Bicarbonate and Hydrochloric Acid on the Course of Experimental Manganese Intoxication" by Candidate of Medical Sciences K. A. Kuz'mina, Chair of Pharmacology, Saratov Medical Institute, Gigiyena i Sanitariya, Vol 22, Feb 57, pp 71-72

Reports the results of experiments conducted on white mice to determine the effects of sodium bicarbonate and hydrochloric acid on the course of intoxication by manganese chloride. Intoxication was induced in the mice by the subcutaneous injection of manganese chloride in doses of 100 milligrams per kilogram of body weight. A 5 percent solution of sodium bicarbonate, and 0.25 normal solution of hydrochloric acid were administered to the animals intravenously. A total of seven experiments were conducted in all. The experiments established that the administration of hydrochloric acid sharply aggravated the course of manganese intoxication, and that sodium bicarbonate administered prior to the intoxication ameliorated the course of the intoxication to a limited degree. (U)

Sum. 1391

VOLYNSKIY, B.G.; FREYDMAN, S.L.; GLAZYRINA, G.A.; KUZ'MINA, K.A.; KUZNETSOVA, S.G.; GVOZDKOV, A.V.

Use of vitamins in some toxications under experimental conditions. Trudy Sar. gos. med. inst. 26:119-121 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, kafedra farmakologii (zav. - dotsent B.G. Volynskiy).
(POISONS—PHYSIOLOGICAL EFFECT)
(VITAMIN THERAPY)

VOLYNSKIY, V.G.; FREYDMAN, S.L.; KUZNETSOVA, S.G.; KUZ'MINA, K.A.; GVOZDKOV, A.V.

Influence of vitamin B_{12} on the course of experimental phosphorus intoxication. Trudy Sar. gos. med. inst. 26:122-125 '59. (MIRA 14:2)

1. Saratovskiy meditsinskiy institut, kafedra farmakologii (zav.- dotsent B.G. Volynskiy).
(CYANOCOBALAMINE) (PHOSPHORUS—TOXICOLOGY)

VOLYNSKIYY B.G.; FREYDMAN, S.L.; BENDER, K.I.; KUZ'MINA, K.A.; KUZNETSOVA, S.G.; MARTYNOV, L.A. (Saratov)

Prevention and treatment of radiation sickness in an experiment. Med.rad. no.9:81 '61. (MIRA 15:1)
(RADIATION SICKNESS)

FURSAYEV, A.D., zasl. deyatel' nauki RSFSR, doktor biol. nauk [deceased]; VORONINA, K.V.; VOLYNSKIY, B.G., kand. med. nauk; FREYDMAN, S.L.; BENDER, K.I.; KUZ'MINA, K.A.; MARTYNOV, L.A.; KUZNETSOVA, S.G.; VINNIKOVA, I.A., red.; ZENIN, V.V., tekhn. red.

[Medical plants and their utilization in medicine] Lekarstvennye rasteniia i ikh primenenie v meditsine. [n.p.] Izd-vo Saratovskogo univ., 1962. 202 p. (MIRA 16:6)
(BOTANY, MEDICAL)

KUZ'MINA, Klavdiya Alekseyevna; NOSKOVA, R.F., red.

[Treatment with bee honey and venom] Lechenie pchelinym medom i iadom. Izd.2., dop. Saratov, Izd-vo Saratovskogo univ., 1965. 78 p. (MIRA 18:12)

KUZ'MINA, K.G.

KUZ'MINA, K.G., inzh.

Universal machine for bending reinforced cages made of flat mesh.
Rats. i izobr. predl. v stroi. no.2:13-16 '57. (MIRA 11:1)
(Bending machines)
(Reinforced concrete)

POLYAKOV, N.G., prof.; CHERIKOVSKAYA, T.Ya., kand. med. nauk; SIDORKOV, A.M., kand. farmatsevt. nauk; BELEN'KIY, Ye.Ye., kand. med. nauk; KUZ'MINA, K.K., provizor; VASIL'YEVA, S.F., provizor; POLYAKOV , N.G., prof., red.; FEL'DSHER, L.N., red.; KUCHERENKO, V.D., red.; CHULKOV, I.F., tekhn. red.

[Basic medicinal preparations and prepared drugs; a manual for physicians] Osnovnye lekarstvennye preparaty i gotovye formy; spravochnik dlia vrachei. Moskva, Medgiz, 1963. 359 p. (MIRA 17:2)

KUZ'MINA, K. K.

(Ch... ...) 11

Isoquinoline compounds. VII. Synthesis of 3-[(1,1-diethoxymethyl)propyl]glutaric acid. M. S. Baimova, R. P. Evstigneeva, R. S. Livshits, K. K. Kuz'mina, and N. A. Preobrazhenskii (M. V. Lomonosov Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.* 23, 149-52 (1953); cf. C.A. 47, 7505.—Heating 60 g. PrCHO, 87 g. $CH_2(CO_2H)_2$, 40 ml. pyridine, and a few drops piperidine 3 hrs. at 60-70° and 3 hrs. at 110° gave 79% *PrCH:CHCO₂H*, b_4 98-102°, m. 31-5°. Heated with EtOH and H_2SO_4 it gave 76% Et ester, b. 174-5°. This (80 g.) and 50 g. HCO_2Et added to 13 g. Na in 400 ml. MePh and allowed to stand 1 day gave a ppt. of *Na deriv.* of *EtCH(CHO)CH:CHCO₂Et*, which treated with ice, the aq. soln. extd. with C_6H_6 and the aq. layer acidified with H_3PO_4 to Congo red and extd. with Et_2O gave, on evapn. of Et_2O, 51% crude *EtCH(CHO)CH:CHCO₂Et* (I); this distd. in N atm. in the presence of a little urotropin, b_1 65-70°, d_{20}^{20} 1.0412, n_D^{20} 1.4648; the product gives violet color with $FeCl_3$ and its MR_D indicates that it is nearly all oxo form. The product tends to polymerize on repeated distn. The Na deriv. of the above ester (11 g.), 12 g. abs. EtOH, and 45 ml. Et_2O satd. with HCl (4.6 g. added) were stirred with cooling 2 hrs., then 14 hrs. at room temp., neutralized with $NaHCO_3$, filtered, and distd., yielding 30.5% *EtC(:CHOEt)CHClCH₂CO₂Et* (II), b_8 68-78°, d_{20}^{20} 0.9927, n_D^{20} 1.4459. I (5 g.) and 4.35 g. $HC(OEt)_3$ treated with 0.1 g. NH_4Cl in 2 ml. abs. EtOH and heated on steam bath 30 min., allowed to stand overnight, decanted and the soln. treated with 2 vol. Et_2O and washed with 5% NH_4OH gave on distn. of the org. layer 35.0% *EtCH[CH(OEt)₂]CH:CHCO₂Et* (III), b_4 78-83°. To EtONa from 4 ml. EtOH and 0.23 g. Na was added at 30-40° 3 g. $CH_2(CO_2Et)_2$, kept 30 min. and treated with 2 g. II and heated 5 hrs.; after concn. and treatment with H_2O the org. layer gave 55.7% *EtC(:CHOEt)CH[CH(CO₂Et)₂]CH₂CO₂Et*, $b_{1.5}$ 148-9°. To 0.6 g. Na in 10 ml. EtOH was added 7.8 g. $CH_2(CO_2Et)_2$ and 6 g. III and heated on water bath 5 hrs.; after usual aq. treatment there was obtained 48.3% *EtCH[CH(OEt)₂]CH[CH(CO₂Et)₂]CH₂CO₂Et*, b_1 180-3°. This (5.5 g.) refluxed with 4.6 g. KOH, 45 ml. H_2O and 45 ml. MeOH 5 hrs., concd.,

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chilled, acidified with HCl and extd. with Et_2O gave 37% *EtCH[CH(OEt)_2]CH(CH_2CO)_2O*, b. 175-7°. **VIII. Condensation of substituted β-propylglutaric acids with homoveratrylamine.** L. I. Zakharkin and N. A. Preobrazhenskii (M. B. Lomonosov Inst. Fine Chem. Technol., Moscow). *Ibid.* 153-5. Letting 15 g. γ-ethyl-δ-ethoxy-[illegible] acid (I) stand with 5 ml. $SOCl_2$ 2 hrs. gave the corresponding *acyl chloride*, b. 137-8°, in 47% yield. This (3.7 g.) in C_6H_6 added to 3.4 g. homoveratrylamine and 1.7 g. pyridine in C_6H_6 and stirred 1 hr., then treated with H_2O gave 88% corresponding *N-homoveratrylacetamide*, $C_{21}H_{33}O_5N$, a viscous oil. This (5 g.), 7.5 ml. $POCl_3$ and 50 ml. MePh refluxed 1 hr., decanted, the residue treated with 30 ml. dil. HCl, the soln. freed of tar and treated with NaI soln. and extd. with $CHCl_3$ gave 32% yellow γ-ethyl-δ-[(3,4-dihydro-6,7-dimethoxy-1-isoquinolyl)methyl]-δ-valerolactone-HI, m. 199-201° (from EtOH); picrate, m. 181-2°. I in EtOH satd. with dry HBr at 0° gave after 1.5 days 72% *EtO_2CCH_2CH(CHEtCH_2Br)CH_2CO_2Et*, b. 140-1°, n_D^{20} 1.4628, which (5 g.) with 12 g. homoveratrylamine in MePh and reflux 2.5 hrs. gave [illegible] *N-homoveratryl-δ-ethyl-[illegible]*, b. 227-31°, 21.6%. Heating I (3 g.) with 8 g. homoveratrylamine 4 hrs. at 190-200° gave 68% *dihomoveratrylamide of β-(α'-hydroxymethyl)propylglutaric acid*, $C_{29}H_{42}O_7N_2$, a viscous oil. Heating *HO_2CCH_2CH(CHEtCH_2Br)CH_2CO_2H* with $SOCl_2$ 2 hrs. at 50° gave the *acyl chloride*, 77.5%, b. 141-3°, which added in C_6H_6 to homoveratrylamine with cooling gave 83% *dihomoveratrylamide of β-(α'-bromomethyl)propylglutaric acid*, a viscous oil (from EtOH-Et_2O). The products are intermediates for synthesis of *emetine*.

G. M. Kosolapoff

... amino compounds. ... Synthesis of 11-amino-10-hydroxyundecanoic acid ...

... in 2 hrs. gave 1-chloro-2-... benzoyldecane, m. 102 ...

... $NHMe_2$ ... gave a little ... benzoyl-2-hydroxydecylamine, m. 116-18°. Heating ... gave a low yield of the above secondary amine, but similar reaction with 18% alc. $MeNH_2$ gave a little 1-methylamino-2-hydroxy-10-benzoyldecane, m. 78-90.5°. II. Synthesis of 11-amino-10-mercaptoundecanoic acid and related compounds. *Ibid.* 1274-6.—Heating 11-amino-10-hydroxyundecanoic acid HCl salt (10 g.) and 30 ml. $SOCl_2$, finally at 50-60°, gave 80% *11-amino-10-chloroundecanoyl chloride HCl salt*, decomp. 117.5-19.5°, which refluxed in alc. EtOH 8 hrs. gave 63% Et *11-amino-10-chloroundecanoate HCl salt*, m. 133-5° (EtOH). This (2 g.) in 15 ml. H_2O

1/2

KUZ'MINA, K.K.

MARKOVA, Yu.V.; KUZ'MINA, K.K.; SHCHUKINA, M.N.

Synthesis of mercapto amino compounds. Part 2: Synthesis of 11-amino-10-mercapto hendecanoic acid and related compounds. Zhur.ob.khim. 27 no.5:1274-1276 My '57. (MLRA 10:8)

1.Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.
(Hendecanoic acid) (Mercapto compounds)

MARKOVA, Yu.V.; KUZ'MINA, K.K.; SHCHUKINA, M.N.

Synthesis of S35-merkamin. Khim.i med. no.11:39-42 '59.
(MIRA 13:6)
(ETHANETHIOL)